

Name: _____

Quiz 3 (20 points)

You must show all of your work!

1. Let $f(x) = x^{\cos(x)}$. Write an expression for $f'(3)$. DO NOT EVALUATE. (3 pts)

2. Let $g(x)$ be the piecewise function defined by

$$g(x) = \begin{cases} x^2 - s & : x < 4 \\ t & : x = 4 \\ 3x + 1 & : x > 4 \end{cases}$$

Find s and t such that $g(x)$ is continuous. (7 pts)

3. Ron Jeremy and Ron Paul are running a 20 meter three legged race. The distance they have run (in meters) is a function, $s(t)$ of the time t (in seconds) since the beginning of the race. Below is a table of certain values of $s(t)$. (13 pts)

t (seconds)	0	1	2	3	4	5	6
$s(t)$ (meters)	0	1.1	2.7	4.9	8.7	14.1	20

a) Is $s(t)$ concave up or concave down? What does this mean in practical terms? (4 pts)

b) Estimate $s'(4)$. Include units. What does this mean in practical terms? (6 pts)